Arts and the Engineer

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Most people, probably, remember the story of the piccolo player who thought that he was adding nothing to the music of the orchestra and decided to stop. But immediately the director called for the piccolo; it was needed to make complete harmony. The same is true of the arts subjects or cultural elements of an engineering education; the piccolo of English may seem insignificant in comparison with the trombone of shopwork, but it is just as essential.

"Recognition for engineers" is a common topic for discussion at meetings of engineers, and is often treated in technical periodicals; it has become a subject of vital importance. The profession has at last waked up to the fact that while the engineer has been doing the work, the man who knows news values has been hogging the credit. The engineer seems to be about to come into his own through the medium of self-expression.

To make the most vivid impression upon the public, technical matter must be presented in the language of the people, must be couched in terms that they understand, must be full of references to common experience. The engineer of the past has simply done the measuring and the drafting; the prosecuting attorney or some other person possessing the gift of gab has tried to explain the plans, overlooked the points of greatest advantage and fooled the people generally. Why shouldn't the explaining be done by the engineer, the person who has the most thorough knowledge of the project?

Simply because he hasn't been trained for it. The engineer is paid for what he does, and he phasized only the technical subjects, the ones which seem necessary for the performance of actual work. And the student has wanted only those courses which seem to him with his limited vision to have practical value; he has resented the requirements of English, Geology, Astronomy and foreign languages. "I'm going to be a Civil Engineer," he declares. "Who do I need to study the stars?" He seems to feel that the engineer should be prepared to do things; not to talk about them.

Technical knowledge is indeed highly essential. The engineer is pai dfor what he does, and he must know how to *do*. But is his pay adequate; is his value fully realized? Indeed, no. The engineer must learn to sell his services. He must know how to express himself in such a manner that the public will understand and appreciate his work. He should cultivate self-expression for its value in advancing him in his profession, in his opportunity for service, and in his privileges and obligations as a citizen.

Engineers should make the best salesmen for engineering products. But they are often beaten at the selling game by the fellow who has only superficial knowledge, and has learned to play that up to best advantage. The same is true when the engineer is selling his services; without being egotistical, he should know how to tell what he can do. In discussions in meetings and articles in professional journals he should be able to tell his solution of problems clearly and interestingly. This ability will help him to advance his profession and himself.

The engineer is a teacher. Because of his superior training, he should be able to aid in the economical and efficient management of public affairs. To do this, ability to speak and write the language of the people is a prime requisite. In the humdrum of professional duties the engineer should never forget that he is a citizen, who, because of his ability and education, has particular opportunities and obligations in the matter of government. If he is unable to present his opinions—the fruit of sound judgment and logical reasoning—in a convincing manner, he is most unfortunate; he is not doing his best.

Something to say is not sufficient; that something must be said in the most effective way. The engineer must study the principles which underlie expression that brings results; he must learn how to bring his subject into contact with the experience of his hearers.

So the courses in English in technical schools are not excess baggage; they are fundamentals. It is undoubtedly true that the student will get out of such courses just about what he puts into them; he must be made to realize their vital importance. A clear discussion, a pleasing letter, personality, have won many a job. It has become almost impossible to get a position without facility in expression. And it should be. The engineer is called upon to give instructions; he must be able to make himself clear or the instructions are worthless.

"Reverse that beam!" yelled a young engineer to a negro construction gang. They hesitated, then went on as before. Again he called, "Reverse that beam!" No effect. "Just turn her for end, boys," spoke up an old engineer who knew the vernacular. And the command was obeyed.

This is rather an extreme case, but it illustrates a point. You must touch the experience of the people to whom you talk. Too many articles about engineering work bristle with terms which spoil their value as educational matter; too many text-books require constant reference to a dictionary. Use the right word in the right place, and make it a simple one if possible. "Don't write it—say it," pleads Alex Black, editor of the Newspaper Feature Service. "The right word is developed by a feeling for saying it. Most of the disappointments come not from failure to understand, but because the public's natural human interests have not been sufficiently considered and successfully reached."

"But," you say, "the engineering course is full now. There is no time for extra courses." True. Engineering faculties should know that the so-called cultural courses are really fundamentals and treat them as such. Can an engineer discuss costs and commerce intelligently without a knowledge of the fundamental principles of economics?

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Could Hoover have performed his feats in human engineering without more than technical knowledge? "The biggest engineers," said Prof. C. E. Sherman recently, "thoroughly perfected themselves in the fundamentals of life and made their technical study secondary." You should get in college what you can't get outside. The graduate engineer must measure up to college standards in general culture as well as in technical fields. If he would realize it, the engineering student is really at an advantage in taking the arts subjects in connection with his technical studies; he has learned to come up to specifications; he has learned how to study. Understanding their importance as fundamentals, he will be enabled to derive the greatest benefit from them.

The time has come, the walrus said,
To talk of many things,
Of shoes and ships and sealing-wax,
Of cabbages and kings.

And general culture! The engineering student is building for life; he expects to be successful and in time to meet people who do not talk shop, who talk of kings but not of cabbages, of art but not of coefficients of rigidity. The man who cultivates his imagination, who learns to appreciate art and poetry, and takes a little time to "invite his soul," will make a better engineer. He will have an opportunity to observe life whole, to see his work in relation to the activities of other people. Having caught the vision he will be able

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to render greater service and derive more pleasure from life. An understanding of the deeper and finer things and sentiments, ability to enjoy other plays than burlesque, other literature than the All-Story, other music than ragtime, a knowledge of universals, all these will give him a well-furnished mind, a valuable asset during the time of work and a comfort in the chimney-corner days of old age.

For many reasons, then, the advantage to be derived from the mingling of the cultural courses, particularly English, with technical studies are very great. In this way the engineer is prepared to take his place as a professional man, an educator, a citizen and a man of culture. Let us give the humanities the position they deserve as fundamentals of life.